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ABSTRACT

This instructional module on physiological aspects of aging is one in a block of 10 modules designed to provide the human services worker who works with older adults with basic information regarding the aging process. An introduction provides an overview of the module content. A listing of general objectives follows. Nine sections present informative material on each of the nine objectives. Topics are: the physiology of aging; changes in the skin and in the musculoskeletal, cardiovascular, respiratory, gastrointestinal, urinary, and central nervous systems; and sexuality changes. Other contents include a summary and listings of selected readings and additional resources. (YLB)

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BLOCK A

Basic Knowledge of the Aging Process

MODULE A·5

Physiological Aspects of Aging

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ELDERLY SERVICE WORKERS' TRAINING PROJECT

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PHYSIOLOGICAL ASPECTS OF AGING
MODULE A.5

THE ELDERLY SERVICE WORKERS' TRAINING PROJECT WISHES TO EXPRESS APPRECIATION OF THE FOLLOWING INDIVIDUALS WHO HAVE CONTRIBUTED TO THE DEVELOPMENT OF THE "PHYSIOLOGICAL ASPECTS OF AGING" MODULE.

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Introduction

Wine improves with age. Its flavour becomes full and rich, its value enhanced.

Trees and flowers grow in beauty and worth as they age. Such success comes after a lifetime of growth and change. This process began "before birth."

People also change and grow as they age. Some of the changes are proud ones, such as wisdom and understanding. Some of the changes make the people change themselves - walk more slowly, eat more carefully.

All people have similar changes as they grow older but they may occur at different times. A person's "body age" (biological) may be quite different from one's age in years. One person may be fifty years OLD; another may be eighty years YOUNG. Cousin Emma has silver hair at age 30; Uncle Joe can still ride a bicycle at 80.

Not all changes are obvious ones. While Uncle Joe is still trim and fit, his blood vessels have narrowed and he doesn't see well at night. These are internal changes, ones that are not visible but still have an affect on the person. External changes are those that can be seen.

Aging is inevitable and so is change. How and when one changes depends on two things - heredity and

ENVIRONMENT. HEREDITY IS THE LEGACY RECEIVED FROM ONE'S ANCESTORS. IT IS GREATLY AFFECTED BY ENVIRONMENT WHICH IS EVERYTHING AROUND THE PERSON. THESE TWO FACTORS PLUS THE PERSON MAKE UP A UNIQUE INDIVIDUAL.

THE REMAINDER OF THE MODULE LOOKS AT OBVIOUS AND HIDDEN SIGNS OF AGING AND WHAT AFFECTS THEM. IT ALSO SUGGESTS WAYS OF ENJOYING THE CHANGES THAT OCCUR. THE MESSAGE OF THE MODULE IS: USE IT OR LOSE IT.

GENERAL OBJECTIVES

UPON COMPLETION OF THIS MODULE, YOU WILL BE ABLE TO:

(1) DEFINE "PHYSIOLOGY OF AGING" AND THE INTERNAL AND EXTERNAL FACTORS THAT AFFECT IT.

(2) DESCRIBE CHANGES THAT OCCUR IN THE SKIN OF THE OLDER ADULT.

(3) DESCRIBE CHANGES THAT OCCUR IN THE MUSCULOSKELETAL SYSTEM OF THE OLDER ADULT.

(4) DESCRIBE CHANGES THAT OCCUR IN THE CARDIOVASCULAR SYSTEM OF THE OLDER ADULT.

(5) DESCRIBE CHANGES THAT OCCUR IN THE RESPIRATORY SYSTEM OF THE OLDER ADULT.

(6) DESCRIBE CHANGES IN THE GASTROINTESTINAL SYSTEM OF THE OLDER ADULT.

(7) DESCRIBE CHANGES IN THE URINARY SYSTEM OF THE OLDER ADULT.

(8) DESCRIBE SEXUALITY CHANGES IN THE OLDER ADULT.

(9) DESCRIBE CHANGES IN THE CENTRAL NERVOUS SYSTEM OF THE OLDER ADULT.

THE FOLLOWING SECTION WILL PRESENT THE "PHYSIOLOGY OF AGING" AND THE INTERNAL AND EXTERNAL FACTORS THAT AFFECT IT.

THE PHYSIOLOGY OF AGING

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DEFINE PHYSIOLOGY OF AGING AND THE INTERNAL AND EXTERNAL FACTORS THAT AFFECT IT.

"PHYSIOLOGY" IS HOW THE BODY WORKS; WHAT IT DOES WITH WHAT IT HAS. THE PHYSIOLOGY OF A CAR IS HOW THE MOTOR RUNS, HOW THE EXHAUST SYSTEM WORKS, HOW THE TRANSMISSION PERFORMS.

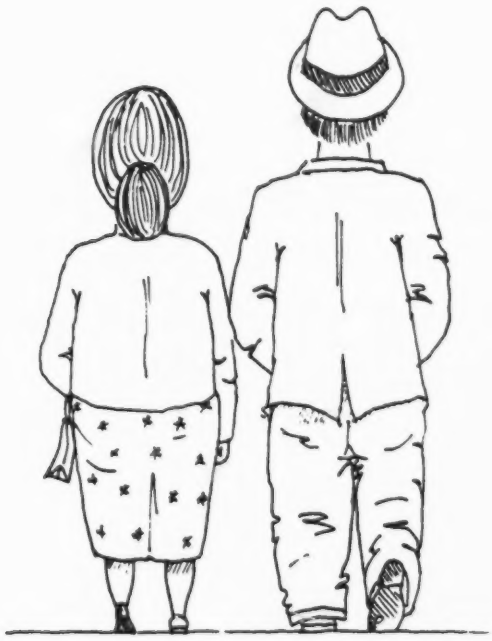
PHYSIOLOGY INCLUDES LOOKING AT THE BODY PARTS BUT ONLY IN RELATION TO HOW THEY WORK. IN STUDYING THE PHYSIOLOGY OF AGING, ONE SEES THAT THE BODY PARTS DO CHANGE. THE IMPORTANT POINT HOWEVER, IS HOW THEY WORK AND HOW THEY ARE AFFECTED BY HEREDITY, THE INTERNAL FACTOR OR ENVIRONMENT, THE EXTERNAL FACTOR.

EVEN AT BIRTH A PERSON HAS RECEIVED A GIFT OF HEREDITY. HE MAY HAVE GRAMPA'S BLUE EYES, GRANNY'S LONG FEET, OR UNCLE JOHN'S RED HAIR. ONE MAY ALSO INHERIT OTHER CHARACTERISTICS. ONE MAY HAVE INHERITED A TENDENCY TO DEVELOP A CERTAIN DISEASE, THE TENDENCY TO GROW FAT OR, TO HAVE POOR EYESIGHT.

THE CHARACTERISTICS THAT WE INHERIT ARE CLOSELY TIED TO ENVIRONMENT. THIS IS THE PERSON'S WORLD AROUND ONE - WHO ONE LIVES WITH, WHERE ONE LIVES, WHAT ONE DOES FOR WORK AND PLAY AND WHAT ONE EATS.

PEOPLE CAN DO LITTLE ABOUT THEIR HEREDITY BUT THEY CAN INFLUENCE THEIR ENVIRONMENT. OFTEN PEOPLE MAINTAIN ENVIRONMENTS THAT ARE HARMFUL TO THEM. THEY MAY OR MAY NOT REALIZE IT.

STUDIES SHOW THAT BEING MARRIED AND THAT LIVING RURALLY CAN INCREASE ONE'S EXPECTED LENGTH OF LIFE BY FIVE YEARS. THIS DOES NOT MEAN THAT EVERY PERSON SHOULD GRAB A PARTNER AND HEAD FOR THE HILLS. IT MEANS THAT HAVING CLEAN AIR TO BREATHE AND HAVING PEOPLE AROUND WHO CARE ARE GOOD FOR ONE'S HEALTH.



"LIFESTYLE" IS A POPULAR WORD TODAY. IT REFERS TO A PERSON'S LIFE HABITS OF EATING, PLAYING, AND WORKING. EACH PERSON HAS THEIR OWN LIFESTYLE. SOME ARE MORE HEALTHY THAN OTHERS. SOMETIMES ONE THINKS THAT IF "IT" IS FUN, THEN IT MUST BE UNHEALTHY. WHILE THIS IS NOT TRUE, CERTAIN 'FUN' THINGS DONE IN YOUTH SUCH AS SMOKING OR OVEREATING MAY WELL TURN OUT TO BE HARMFUL IN LATER LIFE. ON THE OTHER HAND, HABITS OF REGULAR EXERCISE AND ACTIVITY DEVELOPED IN EARLY YEARS WILL MAKE LIFE BETTER AND MORE PRODUCTIVE FOR THE OLDER ADULT.

THE FOLLOWING SECTION LOOKS AT VISIBLE AND HIDDEN CHANGES THAT OCCUR IN VARIOUS BODY PARTS WITH AGING.

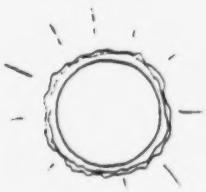
CHANGES IN THE SKIN

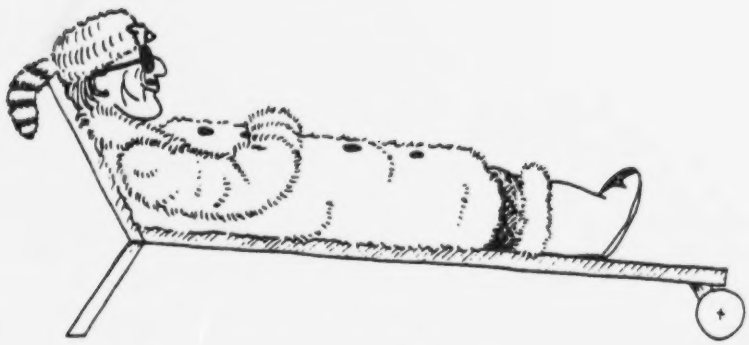
UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE CHANGES THAT OCCUR IN THE SKIN OF THE OLDER ADULT.

THE SKIN, OR EPITHELIUM, IS THE BODY'S PROTECTION AND COVERING. WHILE MANY BODY PARTS BECOME THICKER WITH AGE, THE SKIN BECOMES THINNER.

THE LAYERS OF SKIN BECOME LESS ELASTIC AND LESS MOIST WITH AGE. THE LAYER OF FAT THAT LIES UNDER THE SKIN (SUBCUTANEOUS FAT) LESSENS ALSO, SO THE FACE AND LIMBS LOOK THINNER. THESE CHANGES, PLUS THE YEARS OF EXPOSURE TO SUN AND WIND, PRODUCE SOFT WRINKLED SKIN. THE "CROW'S FEET", "LAUGH LINES" AND WRINKLES TELL OF A LIFETIME OF JOYS AND SORROWS. ISN'T IT A SHAME THAT PEOPLE SPEND SO MUCH TIME AND MONEY TRYING TO COVER UP SUCH SIGNS OF LIVING AND LEARNING!

THE SUBCUTANEOUS FAT ALSO SERVES AS HEAT INSULATION. LOSS OF THIS TISSUE MAKES THE OLDER ADULT OFTEN FEEL COLD, EVEN ON WARM DAYS.





ON THE OTHER HAND, LOSS OF SWEAT GLANDS AND SKIN ELASTICITY MAKE THE OLDER ADULT UNCOMFORTABLE IN HOT WEATHER. AN OLDER ADULT DOES NOT PERSPIRE AS FREELY AS ONE DID IN EARLIER YEARS. THIS MAY BE A MIXED BLESSING, BUT IT DOES PUT ONE AT GREATER RISK FOR SUFFERING FROM HEAT EXHAUSTION.

PIGMENT IS SKIN COLOURATION. THE THINNING OF THE EPITHELIUM AND A CHANGE IN PIGMENT DISTRIBUTION LEAD TO THE APPEARANCE OF FRECKLES ON HANDS AND FACE. THESE SPOTS ARE COMMONLY AND INCORRECTLY CALLED "LIVER SPOTS." THEY HAVE NOTHING TO DO WITH THE LIVER.

THE SKIN IS THE BODY'S PROTECTION FROM INFECTION AND INJURY. HELPING THE SKIN DO ITS JOB IS AN IMPORTANT TASK FOR THE OLDER ADULT. CHANGES IN MOISTURE, THICKNESS, ELASTICITY AND UNDERPADDING LEAD TO CHANGES IN THE CARE OF THE SKIN. DAILY BATHING BECOMES LESS IMPORTANT AS IT FURTHER DRIES OUT THE SKIN. GENTLE MASSAGES WITH (NON-ALCOHOL) LOTION HELP TO KEEP THE SKIN SOFT AND PLIABLE. PROTECTION FROM SUN AND WIND IS A GOOD IDEA, AS IS EARLY ATTENTION TO ANY CUTS OR SORES.

THE FOLLOWING SECTION WILL LOOK AT CHANGES THAT OCCUR IN THE MUSCULOSKELETAL SYSTEM OF THE OLDER ADULT.

CHANGES IN THE MUSCULOSKELETAL SYSTEM

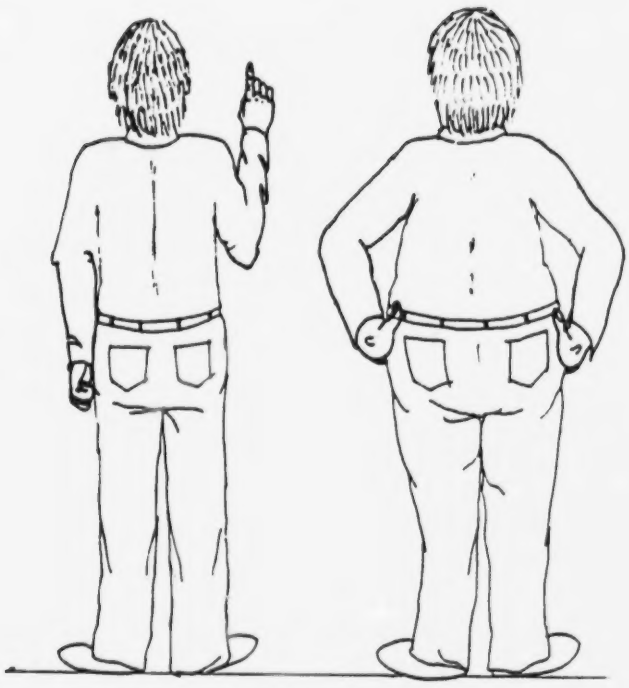
UPON COMPLETION OF THIS SECTION YOU WILL BE ABLE TO DESCRIBE CHANGES THAT OCCUR IN THE MUSCULOSKELETAL SYSTEM OF THE OLDER ADULT.

MUSCLE CELL NUMBER AND STRENGTH ARE AT A LIFETIME HIGH IN ONE'S 20S. EVEN THE 35 YEAR OLD HAS FEWER MUSCLE CELLS. CHANGES IN MUSCLE STRENGTH AND SIZE DEPEND ON MANY THINGS - TYPE OF LIFE WORK, LEISURE ACTIVITIES, BODY BUILD AND NUTRITION.

AS AGING CONTINUES, SOME MUSCLE CELLS ARE REPLACED BY FIBROUS CELLS. THE FIBROUS CELLS DO NOT HAVE THE STRENGTH, WEIGHT, OR ABILITIES OF THE MUSCLE CELLS. THE WHOLE MUSCLE BECOMES LESS STRONG AND HEAVY AND EVEN SHORTER AS TIME GOES ON.

MUSCLES MAKE UP A LARGE PART OF THE BODY TRUNK. BECAUSE THE MUSCLES SHRINK AND LOSE STRENGTH, THEIR ELASTICITY IS LESS. THE BODY OF THE OLDER ADULT THEN APPEARS MORE BULKY, EVEN THOUGH THE WEIGHT MAY BE THE SAME OR LESS. FAT IS REDISTRIBUTED FROM THE OUTSIDE TO THE CENTRAL PARTS OF THE BODY. THUS THE CHAP WITH THE 44 INCH CHEST CIRCUMFERENCE AT AGE 24 BECOMES THE

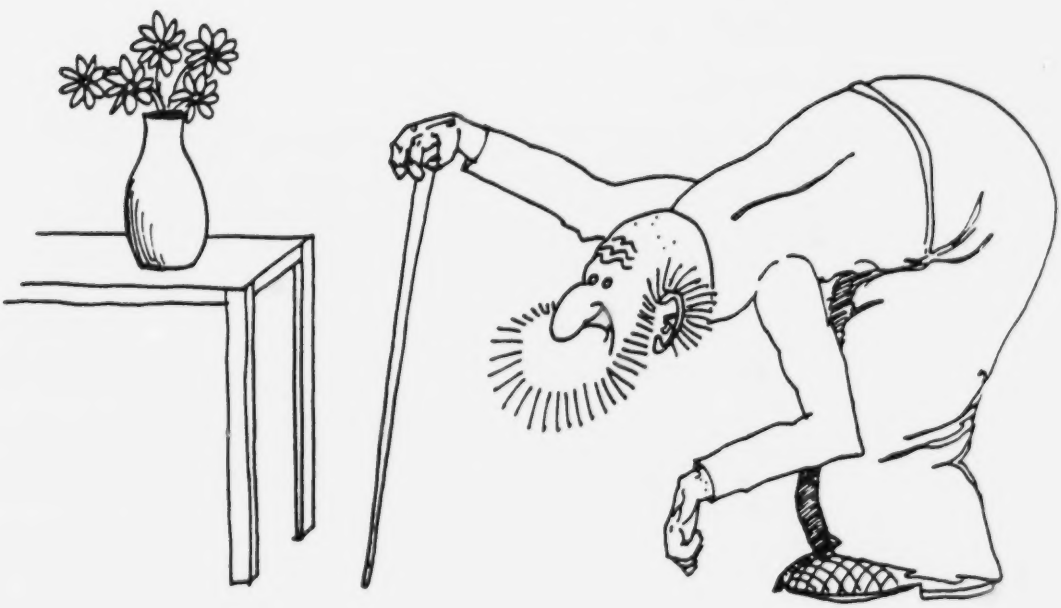
EXECUTIVE WITH THE 44 INCH WAIST CIRCUMFERENCE AT AGE 50.



CALCIUM RESIDES IN BONES TO MAKE THEM STURDY AND TO RESIST BREAKAGE. AS AGE PROGRESSES, CALCIUM DEPOSITS ARE LOST FROM THE SKELETON. THE BONES BECOME LIGHTER, CURVED, AND FRAGILE. THIS IS CALLED OSTEOPOROSIS; THE BONES ARE BRITTLE AND MORE EASILY BROKEN. THE SAME INJURY THAT AT 24 IS QUICKLY FORGOTTEN LEAVES A LIMP AT 54 AND A FRACTURE AT 74. SUCH CALCIUM LOSS IS

ESPECIALLY TRUE FOR WOMEN AFTER THE MENOPAUSE BUT IS ALSO TRUE FOR THE OLDER MALE.

JOINTS ALSO HAVE AGING CHANGES. THE SPACES BETWEEN THE BONES NARROW AND THE (CARTILAGE) ENDS OF THE BONES WEAR AWAY. THIS CAUSES A FURTHER SHORTENING OF THE PERSON'S HEIGHT. IT ALSO CAUSES JOINT STIFFNESS AND PAINFUL LIMITATION OF MOVEMENT. THIS IS CALLED OSTEOARTHRITIS.



OSTEOARTHRITIS AND OSTEOPOROSIS ARE BOTH SIDE EFFECTS OF MAN'S INCREASED LIFE EXPECTANCY. THEY ARE EVENTS THAT OCCUR GRADUALLY AND ARE WORSENED BY INACTIVITY AND EXCESS WEIGHT. THEY CAN OFTEN BE DELAYED OR CONTROLLED. EXERCISE AND PHYSICAL ACTIVITY ARE NOT RESTRICTED TO THE YOUNG. PROGRAMS OF REGULAR EXERCISE AND WEIGHT CONTROL FOR THE OLDER ADULT HELP TO DELAY THE IMMOBILITY THAT IS A FEARFUL AND UNNECESSARY PART OF OLD AGE. A GOOD MOTTO FOR ALL BODY SYSTEMS FOR ALL AGES IS: USE IT, OR LOSE IT.

THIS SECTION WILL PRESENT THE CHANGES THAT OCCUR IN THE CARDIOVASCULAR SYSTEM OF THE OLDER ADULT.

CHANGES IN THE CARDIOVASCULAR SYSTEM

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE CHANGES THAT OCCUR IN THE CARDIOVASCULAR SYSTEM OF THE OLDER ADULT.

BESIDES THE OBVIOUS SKIN AND BODY FRAME CHANGES, THERE ARE ALSO CHANGES IN THE OLDER ADULTS' HEART AND BLOOD VESSELS.

THE EFFICIENCY OF THE HEART AS A PUMP IS MEASURED IN TWO WAYS: (1) THE AMOUNT OF BLOOD PUMPED TO THE BODY PARTS WITH EACH HEARTBEAT AND (2) THE EFFORT REQUIRED OF THE HEART TO DO THE PUMPING.

THE "BLOOD PRESSURE" IS A MEASUREMENT OF THE EFFORT REQUIRED TO PUMP THE BLOOD THROUGH THE SYSTEM. IT IS DEPENDENT AMONG OTHER THINGS ON THE STRENGTH OF THE HEARTBEAT AND THE RESISTANCE OF THE BLOOD VESSEL WALLS. THE EFFICIENCY OF THE HEART AS A PUMP AT 80 YEARS OF AGE IS ABOUT 70% OF WHAT IT WAS AT AGE 30.

PART OF THIS LOSS IN EFFICIENCY IS DUE TO THE BLOOD VESSEL WALLS BECOMING THICKER AND LESS ELASTIC. THE CHANGES IN THE VESSEL WALLS ARE A NORMAL PROCESS OF AGING. THEY ARE A RESULT OF THE LOSS OF ELASTICITY AND

MUSCLE TONE TALKED ABOUT EARLIER IN THE MODULE. SUCH HARDENING OF THE VESSELS IS CALLED ARTERIOSCLEROSIS.

ANOTHER CONDITION COMMON TO THE OLDER ADULTS IS ATHEROSCLEROSIS. THIS IS A NARROWING OF THE VESSELS DUE TO DEPOSITS OF FAT AND CHOLESTEROL ON THEIR WALLS. IT MAY MAKE AN ARTERY OPENING SO NARROW AS TO CLOSE OFF COMPLETELY. EATING FOODS RICH IN ANIMAL FAT (CHOLESTEROL) AND BEING OVERWEIGHT CONTRIBUTE TO THE DEVELOPMENT OF ATHEROSCLEROSIS. TOO LITTLE EXERCISE AND TOO MUCH STRESS ALSO CONTRIBUTE TO BLOOD VESSEL DISEASE. LASTLY, EVEN SMOKING IS RESPONSIBLE FOR NARROWING BLOOD VESSELS.

THE PROBLEMS OF ARTERIOSCLEROSIS, ATHEROSCLEROSIS, AND REDUCED HEART PUMP PERFORMANCE LEAD TO REDUCED EFFICIENCY OF THE OLDER ADULT'S ENTIRE BODY SYSTEM. THIS LEADS TO AN INCREASED RISK OF DISEASES SUCH AS; HYPERTENSION, CONGESTIVE HEART FAILURE, AND STROKE, ALL OF WHICH CAN BE POSTPONED.

WHAT THE PERSON EATS AND DOES HAS AN IMPORTANT BEARING ON THE INCIDENCE OF DISEASE. THE NUTRITION MODULE WILL HELP TO SHOW THE RELATIONSHIP OF DIET AND DISEASE.

THIS SECTION WILL PRESENT THE CHANGES THAT OCCUR IN THE RESPIRATORY SYSTEM OF THE OLDER ADULT.

CHANGES IN THE RESPIRATORY SYSTEM

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE CHANGES THAT OCCUR IN THE RESPIRATORY SYSTEM OF THE OLDER ADULT.

BREATHING IS AN ACTIVITY NO ONE THINKS ABOUT, UNLESS THEY'RE HAVING DIFFICULTY DOING IT. IT IS THE AUTOMATIC EXCHANGE OF AIR IN THE LUNGS. LUNG TISSUE IS ELASTIC AND THE RIB CAGE IS MOVEABLE. SPEED AND DEPTH OF BREATHING ADJUSTS NATURALLY TO COPE WITH WHATEVER ACTIVITY THE PERSON IS DOING.

WHILE THIS CONTINUES THROUGHOUT LIFE, THE OLDER LUNGS BECOME LIMITED IN THEIR ABILITY TO ADAPT TO WHAT THEIR OWNER REQUIRES. THE BREATHING CAPACITY IS LESS EFFECTIVE IN THE OLDER ADULT. ONE BECOMES SHORT OF BREATH BECAUSE OF LESSENED ELASTICITY OF LUNG TISSUE.

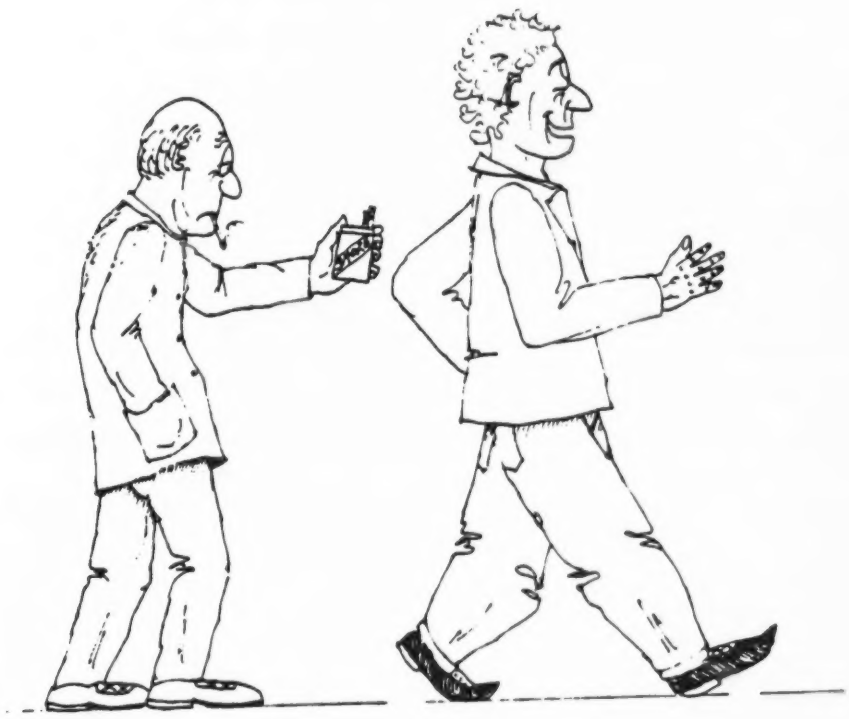
AGE BRINGS A STIFFENING AND REDUCED MOVEMENT OF THE RIB CAGE. THIS ALSO CONTRIBUTES TO REDUCED LUNG EXPANSION. LESS LUNG EXPANSION MEANS LESS AIR EXCHANGE AND LESS OXYGEN TO THE BODY CELLS.

WHILE NOT PART OF THE RESPIRATORY SYSTEM, THE BODY'S IMMUNE SYSTEM (SELF-PROTECTION) BECOMES LESS

EFFICIENT WITH AGE. THE OLDER ADULT THUS IS MORE SUSCEPTIBLE TO RESPIRATORY INFECTION AND TAKES LONGER TO RECOVER FROM IT.

AS WITH ALL OTHER BODY PARTS, KEEPING THE RESPIRATORY SYSTEM CLEAN AND IN GOOD WORKING ORDER IS IMPORTANT FOR THE OLDER ADULT. AVOIDING THOSE INDIVIDUALS WITH OBVIOUS COLDS IS THE FIRST RULE FOR GOOD HEALTH.

SMOKING POLLUTES THE AIR BREATHED, NARROWS THE BLOOD VESSELS AND CLOGS THE LUNGS. AVOIDING SMOKING AND THOSE WHO SMOKE IS A GOOD WAY TO PROVIDE CLEAN AIR FOR EASIER BREATHING.



MODERATE EXERCISE ENCOURAGES A PERSON TO BREATHE DEEPLY. MUSCLE ACTIVITY HELPS THE BLOOD FLOW EFFICIENTLY TO ALL BODY PARTS.

THIS SECTION WILL PRESENT THE CHANGES IN THE GASTROINTESTINAL SYSTEM OF THE OLDER ADULT.

CHANGES IN THE GASTROINTESTINAL SYSTEM

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE CHANGES IN THE GASTROINTESTINAL SYSTEM OF THE OLDER ADULT.

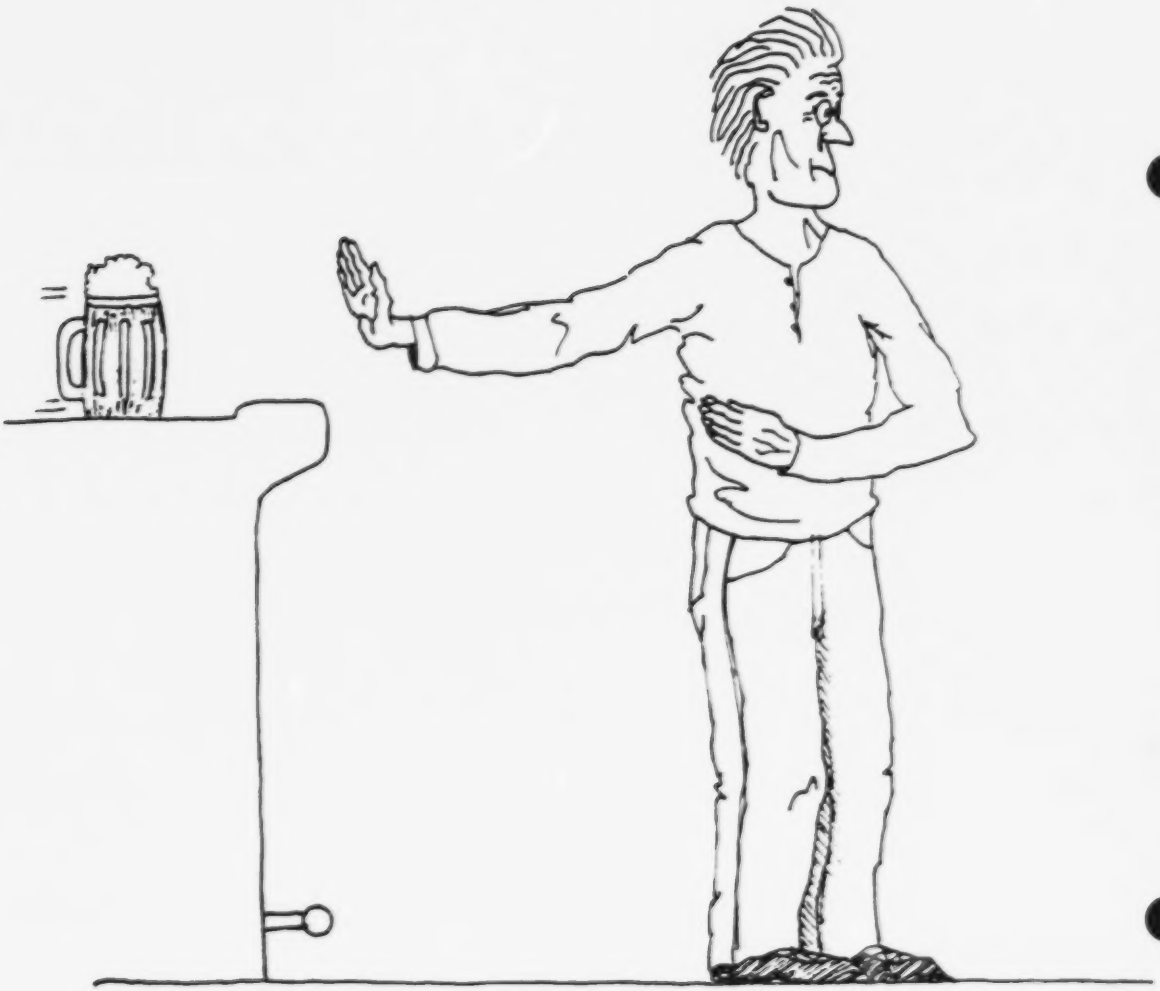
ONE OF LIFE'S GREAT PLEASURES IS EATING. IT IS CLOSELY TIED TO LIFESTYLE, HEREDITY, AND ENVIRONMENT.

THE GASTROINTESTINAL SYSTEM (FOOD TUBE) GENERALLY FUNCTIONS WELL THROUGHOUT LIFE, DESPITE THE MANY INSULTS IT OFTEN RECEIVES. THE STRUCTURE OF THE STOMACH AND LARGE AND SMALL BOWELS DO NOT CHANGE A GREAT DEAL WITH AGE. THE INTESTINAL WALLS AND MUCOUS LINING MAY BECOME THINNER AND LESS ELASTIC. THE DIGESTIVE ORGANS (PANCREAS AND LIVER) MAY PRODUCE LESSENED AMOUNTS OF JUICES (ENZYMES) NEEDED TO BREAK DOWN THE FOOD. THIS RESULTS IN DIFFICULTY ABSORBING IRON, VITAMINS, AND OTHER NUTRIENTS.

LOSS OF LARGE BOWEL ELASTICITY MAY RESULT IN CONSTIPATION. MANY OLDER ADULTS FEAR THIS AND RESORT TO UNNECESSARY USE OF LAXATIVES. MAINTAINING A HIGH FLUID AND FIBRE INTAKE AS WELL AS REGULAR EXERCISE IS THE BEST PREVENTION AGAINST CONSTIPATION.

THE MODULE ON NUTRITION GIVES GOOD INFORMATION ABOUT FOOD NEEDS FOR THE OLDER ADULT.

THE LIVER IS IMPORTANT FOR FOOD BREAKDOWN (METABOLISM) AND EXCRETION OF WASTES. IT TOO USUALLY WORKS WELL THROUGHOUT LIFE. DIMINISHED FUNCTION IS USUALLY THE RESULT OF A DISEASE. FOR EXAMPLE, CIRRHOSIS IS A CHRONIC DETERIORATION OF THE LIVER AND LEADS TO DIGESTION PROBLEMS. HOWEVER IT IS MORE RELATED TO ALCOHOL ABUSE OR DISEASE THAN TO NORMAL AGING.



THIS SECTION WILL PRESENT THE CHANGES IN THE URINARY SYSTEM OF THE OLDER ADULT.

CHANGES IN THE URINARY SYSTEM

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE CHANGES IN THE URINARY SYSTEM OF THE OLDER ADULT.

THE PURPOSE OF THE KIDNEYS IS TO FILTER OUT WASTES FROM THE BLOODSTREAM. THIS FUNCTION CONTINUES THROUGH LIFE ALTHOUGH IT BECOMES LESS EFFICIENT IN OLDER ADULTS. THE 80 YEAR OLD HAS ONLY HALF THE EFFICIENCY OF A 30 YEAR OLD.

THE BLADDER'S JOB IS TO COLLECT AND HOLD THE URINE PRODUCED BY THE KIDNEYS AND THEN SIGNAL ITS OWNER TO EMPTY IT WHEN NECESSARY. OLDER ADULTS MAY FIND THAT THEIR BLADDER CAPACITY IS LESS THAN IN EARLIER DAYS. THEY TEND TO GO TO THE BATHROOM MORE FREQUENTLY. THIS IS PARTLY DUE TO A REDUCED BLADDER CAPACITY AND PARTLY TO A FEAR OF NOT BEING ABLE TO "HOLD IT". OLDER FEMALES OFTEN ARE BOTHERED BY STRESS INCONTINENCE WHICH IS SUDDEN PASSING OF URINE WHEN COUGHING OR SNEEZING. THIS MAY BE A RESULT OF WEAKENED PELVIC MUSCLES FROM EARLIER CHILDBIRTH.

THE PROSTATE GLAND IS A LARGE GLAND THAT SURROUNDS THE NECK OF THE BLADDER IN THE MALE. THIS GLAND MAY

ENLARGE IN OLDER MEN AND CAUSE EITHER INABILITY TO VOID (RETENTION), OR FREQUENT VOIDING, ESPECIALLY AT NIGHT.

MANY OLDER ADULTS FEAR LOSS OF URINARY CONTROL. THEY THEN CUT DOWN ON THE FLUIDS THEY DRINK THINKING THAT THIS WILL RELIEVE THE PROBLEM. UNFORTUNATELY IT MAKES THE PROBLEM WORSE AS THE URINE BECOMES MORE CONCENTRATED AND IRRITATES THE BLADDER WALL. IT IS IMPORTANT TO ENCOURAGE THE OLDER ADULT TO DRINK PLENTY OF FLUIDS AND TO GO TO THE BATHROOM AT REGULAR INTERVALS. AFTER ALL, A TRIP TO THE BATHROOM IS A FORM OF EXERCISE!

THIS SECTION WILL PRESENT SEXUALITY CHANGES IN THE OLDER ADULT.

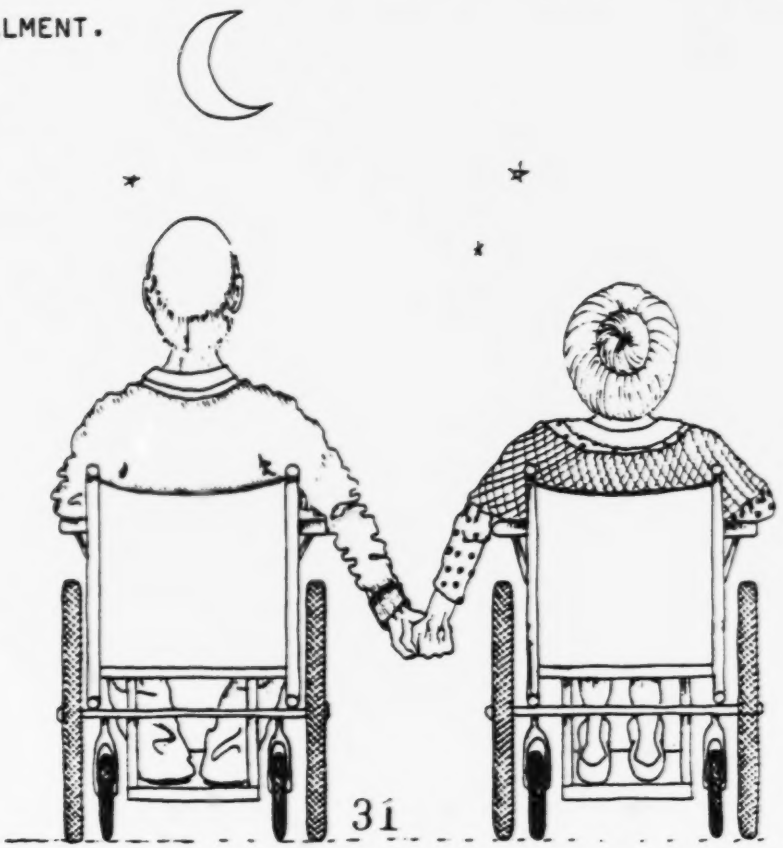
SEXUALITY CHANGES

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE SEXUALITY CHANGES IN THE OLDER ADULT.

IT IS IMPORTANT TO REMEMBER THAT SEXUALITY IS MUCH MORE THAN THE MERE ACT OF INTERCOURSE. IT IS CLOSENESS TO ANOTHER PERSON, FEELINGS OF BEING VALUED, AND MUTUAL CARING. THESE NEEDS DO NOT CHANGE THROUGHOUT LIFE AND ARE JUST AS IMPORTANT AT 80 YEARS OF AGE AS THEY WERE AT 30.

MOST OLDER ADULTS ARE PHYSICALLY CAPABLE OF SEXUAL ACTIVITY INTO THEIR 80'S AND BEYOND. VAGINAL DRYNESS OR SLOWNESS TO OBTAIN OR MAINTAIN AN ERECTION ARE NORMAL AGING CHANGES THAT NEED TO BE RECOGNIZED. THEY ARE IN NO WAY A SIGNAL THAT ACTIVITY SHOULD STOP. CHANGES IN THE COUPLES METHOD AND APPROACH CAN LEAD TO NEW PLEASURE IN LOVEMAKING.

MANY OLDER COUPLES DO EXPERIENCE A DECREASE IN FREQUENCY OF SEXUAL ACTIVITY FOR A VARIETY OF REASONS. WHEN ILLNESS OR DISABILITY INTERFERE WITH SEXUAL ACTIVITY, OTHER EXPRESSIONS OF WARMTH AND CARING BECOME MORE IMPORTANT. THE OLDER ADULTS' NEED FOR CLOSENESS AND CARING ARE NORMAL HUMAN NEEDS AND REQUIRE FULFILLMENT.



THIS SECTION WILL PRESENT THE CHANGES IN THE CENTRAL NERVOUS SYSTEM OF THE OLDER ADULT.

CHANGES IN THE CENTRAL NERVOUS SYSTEM

UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO DESCRIBE CHANGES IN THE CENTRAL NERVOUS SYSTEM OF THE OLDER ADULT.

SINCE HUMANS ARE BORN WITH OVER 20 BILLION BRAIN CELLS, THEY CAN SAFELY TOLERATE THE GRADUAL LOSS THAT OCCURS THROUGHOUT LIFE. WHAT THE PERSON LOSES IN BRAIN CELL NUMBERS IS OVERCOME THROUGH EXPERIENCE AND LEARNING.

STUDIES HAVE SHOWN THAT INTELLECTUAL ABILITIES DO NOT CHANGE AS AGE PROGRESSES. MEMORY AND MENTAL ABILITIES CONTINUE THROUGHOUT LIFE. PEOPLE CAN AND DO LEARN THEIR WAY THROUGH LIFE. AS LONG AS THERE IS NO DISEASE PRESENT, THE BRAIN FUNCTIONS WELL. SPEED OF RESPONSE MAY SLOW DOWN WITH AGE. ABILITY TO RESPOND DOES NOT.

ATHEROSCLEROSIS, ALCOHOLISM, AND ALZHEIMERS DISEASE ARE THREE CONDITIONS THAT AFFECT THE BRAIN. THE FIRST TWO ARE RELATED TO EARLIER LIFESTYLES. ALZHEIMER'S AS YET IS A PUZZLE. RESEARCH SUGGESTS THERE MAY BE A BIOCHEMICAL REASON FOR THIS TRAGIC LOSS IN ABILITIES FOR THOUGHT AND RESPONSE.

OTHER PARTS OF THE NERVOUS SYSTEM DO EXPERIENCE AGING CHANGES. THE OLDER ADULT BECOMES LESS SENSITIVE TO TOUCH AND PAIN. VISION IS AFFECTED, ESPECIALLY BY GLARING LIGHTS. ALSO, POOR LIGHTING AND SAMENESS OF COLOURS PRESENT VISION PROBLEMS FOR THE OLDER ADULT.

THE SENSES OF TASTE AND SMELL ARE REDUCED. THE NUTRITION MODULE GIVES GOOD SUGGESTIONS ON HOW THE OLDER ADULT CAN ENHANCE TASTE AND ATTRACTIVENESS OF FOODS.

THE SENSE OF HEARING LESSENS WITH AGE AS THE TINY BONES IN THE EAR BECOME STIFF AND THE NERVES LESS RECEPTIVE. HIGH PITCHED SOUNDS ARE LOST FIRST, LOWER ONES LATER ON.

THE CHANGES IN THE SENSES MEAN THAT MORE CARE MUST BE TAKEN TO COMMUNICATE WELL WITH THE OLDER ADULT. THE LISTENING MODULE HAS GOOD SUGGESTIONS TO FOLLOW TO HELP THE OLDER ADULT REMAIN IN CONTACT WITH THE WORLD AROUND HIM/HER.

SUMMARY

There are many physiologic changes that occur throughout life. Body changes in structure and function are inevitable. Although a person receives a genetic plan through one's heredity, how one lives has a major affect on the speed with which aging changes occur.

Aging changes occur internally and externally. Obvious and visible signs of aging are smaller stature and soft, wrinkled skin. Inward and invisible signs of aging are narrowed blood vessels, changed senses of taste, and vision changes. Each system reviewed has both obvious and hidden changes.

Skin changes in thickness, underpadding and elasticity produce the characteristic soft wrinkles of age. The not so obvious change is the sensation of coldness due to loss of insulation.

Change in joint spaces, bone strength, and muscle elasticity produce the shorter bulky person who needs to be careful of falls or accidents.

The heart as a pump changes in output and efficiency due to the resistance of stiff and narrow blood vessels. Outward signs are the shortness of breath and tiredness seen after unusual exercise.

Changes in rib cage mobility and lung expansion are hidden but their affect is obvious in the older adult's lessened stamina.

THE DIGESTIVE SYSTEM CHANGES WITH AGE ARE MINIMAL, YET OFTEN DISAGREE WITH SOME FOODS OR RESULT IN "PROBLEMS WITH THE BOWELS ". MOST OF THESE DIFFICULTIES ARE AVOIDABLE.

THE URINARY SYSTEM CHANGES ARE LIKEWISE MINOR BUT THE OBVIOUS RESULTS ARE THE INCREASED NIGHTTIME TRIPS TO THE BATHROOM.

THE NEED FOR LOVE AND FULFILLMENT IS AS REAL IN LATER YEARS AS IN YOUTH. PHYSIOLOGICAL CHANGES RELATING TO SEXUALITY ARE MINIMAL.

THE NERVOUS SYSTEM OF THE OLDER ADULT DOES EXPERIENCE CHANGES WITH AGE ALTHOUGH THEY ARE NOT OBVIOUS. FOOD LOSES ITS TASTE, OTHER PEOPLE SEEM TO MUMBLE AND THE LIGHTS ARE EITHER TOO BRIGHT OR NOT BRIGHT ENOUGH. STILL THE ABILITY TO THINK, REASON, AND ARGUE REMAIN TRUE AND PRESENT.

THROUGHOUT THE REVIEW OF BODY CHANGES, SUGGESTIONS OF WAYS TO COPE WITH THEM POINT TO THE NEED TO GET BUSY AND ENJOY LIFE. THE UNDERLYING MOTTO IS :

USE IT

OR

LOSE IT!

APPENDIX

Selected Readings

Allentuck, Andrew. (1977). The Cost of Age. Fitzhenry & Whiteside.

Barry, John R. and Wingrove, C. Ray. (1977). Let's Learn About Aging. Schenkman Publishing Company, Inc.

The Biologic Ages Of Man:from conception through Old Age. Smith and Bierman, W.B. Saunders Company by David W. Smith, M.D. and Edwin L. Bierman, M.D., 1973.

Additional Resources

Place: National Film Board

Address: 245 Main St.
Winnipeg, Manitoba
Canada, R3C 1A7

Drinking

By alternating live-action sequences and animated graphs, the film follows the behavioral and physiological transformations that are directly linked to consumption of alcohol. It shows the short-term and long-term effects on the human body. A French-language version, Un verre ou deux, is also available.

Produced for Health and Welfare Canada.

1976, Color, NFB, 21 minutes.

A Fight for Breath: Emphysema

A film aimed at youngsters tempted by cigarettes but also for all those already addicted. The reason why a man suffering from emphysema has difficulty breathing is graphically illustrated. The respiratory system is shown in animated cross-sectional models, down to the smallest air cells, the alveoli. That is where the breakdown begins which eventually leads to impaired pulmonary function. This internal view of the damage done to the lungs is one that no viewer can ignore. A French-language version, Un combat continuel:L'emphyseme, is also available.

1974, Color, NFB, 11 minutes:42 seconds.

Additional Resources Cont'd

Place: National Film Board of Canada Cont'd

Feelin' Great

In our modern lifestyle there is rarely room for adequate physical activity. This film explains why the human body needs exercise, and the sense of well-being that comes from it. Two types of exercise needed for good health - calisthenic and aerobic - are discussed and suggestions made for ways in which such activities can be made part of our daily lives. A French-language version, Joie de vivre, is also available.
Commissioned by NFB to Visual Education Centre for Fitness and Amateur Sport.

1973, Color, NFB, 21 minutes: 28 seconds.

Don't Take It Easy

An inspiring half-hour documentary designed to encourage fitness among those over 55, Don't Take It Easy features several senior citizens who explain why and show how they stay in shape. Also appearing in the film are geriatricians, physiologists, recreation consultants, and physical activity instructors who describe fitness programs for older persons. Health care professionals and recreation leaders will find this film a valuable aid in motivating senior citizens to exercise. Co-produced by TV Ontario and Fitness Canada.

28:00 106C 0183 075

Arthritis:A Dialogue with Pain

A film about arthritis, its effect upon people's lives, the nature of the disease and how it can be combated. Through the stories of people suffering from arthritis - young and old, mildly to severely afflicted - and interviews with medical professionals, this documentary provides answers to widely asked questions. It is also about pain, and the will to conquer pain.

56min. 106C 0181 019

Additional Resources Cont'd

Place: National Film Board of Canada Cont'd

Changes In The Lung Associated With Cigarette Smoking

A set of 20 slides with teacher's notes. An unforgettable illustration of the effects of cigarette smoking, showing both healthy and diseased lung and bronchial tissue. Macroscopic photographs, showing cancer at various stages of growth, make this slide set an important tool in helping smokers and potential smokers become acutely aware of the negative effects of the habit.

Acknowledgements

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Content Advisory Committee

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Ms. Margaret Redston, Standards Officer, Manitoba Health Services Commission, Long Term Care Programs.
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ADDITIONAL TRANSPARENCY SLIDES WERE MADE AVAILABLE BY:

MANITOBA DEPARTMENT OF HEALTH, HOME ECONOMICS
MANITOBA HEART FOUNDATION

TITLES OF THE TRAINING PROJECT'S MODULES

BLOCK A: BASIC KNOWLEDGE OF AGING PROCESS

A.1 PROGRAM PLANNING FOR OLDER ADULTS
A.2 STEREOTYPES OF AGING
A.3 HUMAN DEVELOPMENT ASPECTS OF AGING
A.4 SOCIAL ASPECTS OF AGING
A.5 PHYSIOLOGICAL ASPECTS OF AGING
A.6 DEATH AND BEREAVEMENT
A.7 PSYCHOLOGICAL ASPECTS OF AGING
A.8 CONFUSION AND THE OLDER ADULT
A.9 NUTRITION AND THE OLDER ADULT
A.10 LISTENING AND THE OLDER ADULT

BLOCK B: CULTURAL GERONTOLOGY

B.1 UKRAINIAN CULTURE
B.1.1 COMMUNICATION AND ADJUSTMENT
B.1.2 COMMUNICATION AND ADJUSTMENT

B.2 GERMAN CULTURE
B.2.1 COMMUNICATION AND ADJUSTMENT

B.3 FRENCH CULTURE
B.3.1 COMMUNICATION AND ADJUSTMENT

B.4 NATIVE CULTURE
B.4.1 COMMUNICATION AND ADJUSTMENT
B.4.2 COMMUNICATION AND ADJUSTMENT

BLOCK C: WORK ENVIRONMENT

C.1 WORK ENVIRONMENT I

NOTE: MOST MODULE'S ARE AVAILABLE IN TWO FORMATS:

A) PRINT FORMAT

OR

B) INTERACTIVE VIDEO (COMPUTER ASSISTED TELEVISION) FORMAT

RESOURCE MATERIALS:

HANDBOOK OF SELECTED CASE STUDIES
USER'S GUIDE